

DETAILED ACTION***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

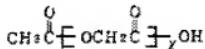
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi et al (JP 56157422, see translation).
3. Regarding claim 1: Applicant claims an acyloxyacetic acid polymer, represented by formula (1) shown below.



Hiroshi discloses (page 2, formula (I)) an acetylated polyglycolic acid polymer, shown below, where X represents an integer from 150 – 1,500.



Applicant's claim corresponds to Hiroshi's disclosure when applicant's R¹ = H, R² = H and n = not less than 5.

4. Regarding claims 2 – 4: Claims 2 – 4 are considered "Product by Process" claims. In such cases, the product is not limited to the process recited. From

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MPEP 2113: “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In the instant case, applicant’s product and Hiroshi’s product are the same. Also, in both cases, the monomer/oligomer are condensed to form the polymer under heating, as claimed by applicant in claims 2 and 3 and disclosed by Hiroshi in page 5, last line, page 6, first line, and example 1.

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi (JP 56-157422) and further in view of Suzuki, Shigeto (US 3,948,977) and Yoshie et al (JP 2001-334438) or the converse.

8. Hiroshi discloses the polymer claimed by applicant; however, the monomer used to form the polymer is made by acetyloyating polyglycolic acid to make the acyloxyacetic acid polymer. Hiroshi fails to teach applicant's claimed process of reacting formaldehyde with carbon monoxide and organocarboxylic acid to form an acyloxyacetic acid.

9. The process, as claimed by applicant, of producing acyloxyacetic acid is well known in the literature. For instance:

10. Suzuki discloses (column 2, lines 46 – 68 and example 9) a process of producing acyloxyacetic acid obtained by reacting formaldehyde, organocarboxylic acid, and carbon monoxide in the presence of a hydrogen fluoride catalyst, corresponding to applicant's claimed reactants and process. Suzuki, however, fails to teach the polymerization of the acyloxyacetic acid product.

11. Yoshie discloses (abstract, claim 1) synthesizing acetoacetic acid by reacting carbon monoxide, acetic acid, and formaldehyde in the presence of a catalyst of metal oxide with sulfuric acid, corresponding to applicant's reactants and process. Yoshie, however, also fails to teach polymerizing the product.

12. However, It would have been obvious to one of ordinary skill in the art to have used the acyloxyacetic acid synthesis method taught by Suzuki or Yoshie

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(corresponding to the process claimed by applicant) and poly-condense it to form the acyloxyacetic acid polymer taught by Hiroshi (and claimed by applicant) as one working in the art would substitute one functionally equivalent process for another.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the polymerization methods set forth in Hiroshi to polymerize the monomeric materials taught by Suzuki or Yoshie as Hiroshi shows that useful polymers can be made from these types of materials.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, Shigeto (US 3,948,977) and Yoshie et al (JP 2001-334438) and further in view of Lundquist, Eric (US 5,233,096).

14. Applicant claims a sulfonic acid type cation exchange resin used as a catalyst. Suzuki and Yoshie also disclose acidic catalysts, such as hydrogen fluoride and metal oxide/sulfuric acid, but fail to disclose the specific catalyst claimed by applicant. Lundquist discloses (column 1, lines 15 – 21) that strongly acidic ion-exchange resins may replace mineral acids such as sulfuric acid and hydrochloric acid in catalyzing reactions. The use of solid, acetic materials permits easier separation of the desired product from the catalyst in the reaction mixture, decreases equipment corrosion and complexity, and increases product purity. Therefore, it would have been obvious to one of ordinary skill in the art to have replaced Suzuki's or Yoshie's catalyst with Lundquist catalyst, since they

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are equivalent, in order to make it easier to filtrate the catalyst out, decrease corrosion and complexity of equipment and increase product purity.

Prior Art Cited But Not Applied

15. Any prior art reference which is cited on Form PTO-892 but not applied is cited to show the general state of the art at the time of applicant's invention. Said references teach the process of producing acyloxyacetic acid.

Examiner Information

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frances Tischler whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 4171

Frances Tischler
Examiner
Art Unit 4171

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